day so largely lacks, some relationship to the psychical needs and attitudes of those under instruction.

JOHN DEWEY.

UNIVERSITY OF CHICAGO, February 6, 1896.

DOES THE PRIVATE COLLECTOR MAKE THE BEST MUSEUM ADMINISTRATOR?

THE concluding portion, section K, of Dr. Goode's recent paper on the Classification of Museums, is devoted to a consideration of private cabinets and collectors, and to the major portion of the propositions therein laid down all can heartily subscribe. There is, however, one among them to which I can not fully assent, at least so far as museums of natural history are concerned, and that is, that "The person who has formed a private collection can most successfully manage one for the use of the public."

It must be confessed that this doubt largely rests upon theory, but an acquaintance with some collectors makes it seem probable that it is, after all, well founded.

A considerable amount of collecting is done with no purpose in view other than that of accumulating specimens, but, on the other hand, a private collection may be formed with a definite purpose and along certain lines. In the one case the collector certainly shows no unusual fitness for a position in a museum, while in the other he is interested in his collection for what he can get out of it himself and not for the benefit it may be to others, and this is exactly the opposite view to that which should be held by an officer in a public museum. This is not saying that such is the point of view universally assumed by museum curators, but it is certain that the success of a public museum depends on the extent to which it is adopted. Again a private collector is, from the nature of the case, apt to be one-sided, to lay too much stress on one group to the exclusion of others, and thus to lack the evenness of balance which should be one of the characteristics of the 'museum man.' This one-sidedness frequently takes the form of undue preference for rare or costly specimens, attaching an undue importance to the specimens themselves rather than what is to be got out of them.

Moreover the care and arrangement of a private study series and of a public study series, and, above all of an exhibition series, are entirely different things and require a totally different treatment. A private series may be ill-arranged and poorly labeled, but the owner knows each specimen, its history and whereabouts. A public study series should, on the contrary, be so arranged and so labeled that any student may consult it and make notes upon it, while in an exhibition series the specimens should be so chosen that, while each conveys some information, all form a harmonious whole.

A private collector may know his own needs, but he would not know or would not care for the needs of the public, and he would carry to a public museum the taste for accumulation, or for research, which probably led to the formation of his own collection. Accumulation is a good thing, but it needs to be properly directed in order to be of public service, while there is probably no greater drawback to the public efficiency of a museum officer than too great devotion to original research, as this leads not only to lack of care for material which has served its turn, but to a very decided lack of interest in the public which must be reached through the exhibition series.

This criticism is by no means to be construed into a criticism of the private collector; the value of his work and the influence of his collections are immense; it is simply a denial of the proposition that because a man has formed a private cabinet he is therefore best fitted to administer a public museum.

F. A. LUCAS.

WASHINGTON, D. C.

SCIENTIFIC LITERATURE.

Lehrbuch der Entwicklungsgeschichte des Menschen und der Wirbelthiere. OSCAR HERTWIG. Jena, Gustav Fischer. 1895. Pp. xvi + 612.

This excellent work now appears in a fifth edition, in which many improvements have been made. Prof. Hertwig is especially distinguished both for his comprehension of the problems of morphology and for the lucidity of his explanations, so that his text-book has long been accepted as a valuable treatise both for students and for advanced workers, and has been accorded the distinction of translation into several languages. A very admirable

translation into English has been published by Prof. Mark, based upon the third German edition. The book has already an assured and high place, and is so well known that it is only necessary to state that its typography and general appearance have remained unchanged.

In the new edition many much needed improvements have been made, and several parts have been entirely recast to concord with the latest progress. The revision has touched especially the following parts: the problem of reduction-division; the rôle of the centrosome in impregnation, the development of the middle germ layer in reptiles and mammals, the structure of the chorion, the origin of striated muscles, of blood corpuscles and the development of the vesicula; and there is one entirely new section, which will be welcome to many embryologists and bears the title, 'Experiments and theories on the significance of the first-formed cleavage cells and of single parts of the ovum for the formation of the organs of the embryo.' There have been so many researches in this field, and they bear so directly on Weismann's and other theories of heredity, that the synopsis given by Hertwig will appeal both to those actively at work in this comparatively new region of embryo-mechanics, and to those who wish to learn what conclusions have been reached up to the present. We may also note that since the first edition the number of illustrations has risen from 304 to 384, and the number of pages from 507 to 612.

There are certain general criticisms to be made upon Hertwigs' text-book. It is certainly a defect that the author leans far too much upon both diagrammatic pictures and upon diagrammatic explanations, and does not allow free play to actual observation. This is disastrously the case in his sixth chapter in which he deals with the origin of the middle germ-layer (cœlom theory), and by artful shading misrepresents the actual facts in a manner which is inexcusable even in a text-book. Facts ought never to be mixed with error merely because such dilution serves to hide their discordance with the author's theoretical views. The same tendency to uphold his cœlom theory shows itself in another way in that he still entirely separates the mesenchymal tissues and the mesothelial (to which latter he erroneously restricts the term mesoblast, p. 115), although it was proven several years ago so as to be past doubt, that Hertwig's view was unjustified and that mesenchyma and mesothelium are parts of the same layer or mesoderm. This result is not a matter of opinion, it is simply a matter of direct observation. This conclusion Hertwig has admitted, yet fails to make it the basis of his exposition, and instead continues the unnatural separation of the two portions of the middle germ layer, much to the confusion of young students.

Other unfavorable criticisms may be made in regard to special parts of the subject treated inadequately. Such parts are: 1. The nervous system, in that he fails to bring out the fundamental division into dorsal and ventral zones, or the existence of the three primary layers of the medullary wall, or the significance of the neck-bend, or the history of the neuromeres. 2. The fact that the nails are modifications of the stratum lucidum of the epidermis, a very important morphological fact. 3. The development of smooth muscle. 4. The history of the group of connective tissues. 5. The account of the formation of the renal tubules is erroneous, and is the most serious defect noticed by the reviewer. 6. The origin and significance of the yolk cavity and its fusion with that of the notochordal canal in Anura and Amniota to form the definite entodermal canal is not discussed, yet it is a very important point in the morphology of the higher vertebrate embryos. These and other examples which might be given show that Hertwig is far from giving a well-rounded presentation of our present knowledge, and that very much needs to be added to make it a thorough and comprehensive treatise.

In spite of these limitations, Hertwig's Embryology is a text-book of the first class, and has done and will probably long continue to do much for the promotion of the branch of science with which it deals. The treatment of the subject is fresh, original, strong and well proportioned, so that the leading points receive due emphasis. In many parts Hertwig speaks with the highest authority, notably in regard to the earlier stages of development, and the history of the genital products. The illustrations are

admirably selected and well executed, except for their tendency toward schematization. The original figures are not numerous and are chiefly diagrams.

In conclusion, it may be said that any student who, with the aid of practical laboratory work, masters Hertwig's book will have mastered the general subject of human embryology from the comparative morphological standpoint, and will be qualified to pursue more advanced study, but he must remain ready to modify many of his general theories and to fill out a number of important gaps in his knowledge. His chief gain will be insight into the very spirit of morphology, through the guidance of one of the very ablest of morphologists.

C. S. MINOT.

A Handbook of the British Macro-Lepidoptera. By BERTRAM GEO. RYE. With hand-colored illustrations by MAUD HORMAN-FISHER. London, Ward & Foxlow. Parts 1–4, Jan.–Oct., 1895.

The four parts issued give a fair idea of the scope and execution of this addition to the already large number of works relating to the butterflies and moths of Great Britain. Each part contains eight pages and two plates.

In the introduction the changes that take place during metamorphosis and the principal characters used in classification are briefly described. Eight families of Rhopalocera are recognized, namely, Papilionidæ, Pieridæ, Nymphalidæ, Apaturidæ, Satyridæ, Lycænidæ, Erycinidæ and Hesperidæ. A table separating these is given, and the genera and species can be readily distinguished by means of similar tables. The species are fairly well described, and the notes on the early stages, haunts, times of appearance, and abundance are clear and concise.

The plates are excellent, and the distinctive value of Mr. Rye's work consists in the description and illustration of the varieties and local races, apart from the consideration of the species, of the Macro-Lepidoptera of Great Britain. Beginning with 1896 the parts will be issued bi-monthly, instead of quarterly. The price per part is 2s. 6d.

SAMUEL HENSHAW.

Mollusca and Crustacea of the Miocene Formations of New Jersey. By R. P. WHITFIELD. Monograph U. S. Geol. Survey. Vol. XXIV. 1894.

This latest contribution of Professor Whitfield to the paleontology of New Jersey is most opportune, since the detailed mapping of the coastal plain formations of the State has recently shown an extensive development of Miocene strata. The character of the deposits is such, however, that determinable fossils have only been detected at a very few points, the great majority coming from the marl beds in the vicinity of Shiloh and Jericho and from the deep well-borings at Atlantic City. These forms Prof. Whitfield has evidently studied with great care and has presented in a most acceptable manner.

Prior to the publication of this report by Prof. Whitfield, little systematic work had been done upon the fossils of the Miocene of New Jersey. Meek's list, published in the 'Smithsonian Miscellaneous Collections' in 1864, contains reference to only seventeen species. Prof. Heilprin in his 'Tertiary Geology of the eastern and southern United States,' published in 1884, gives twenty-seven species, seventeen of which he regards as peculiar to the State. Later, from time to time, the same author added to this list, until in 1887, in an article on 'The Miocene Mollusca of the State of New Jersey,' he enumerates eighty-two species, describing three new species and one variety.

In his monograph Prof. Whitfield recognizes one hundred and four species, but states that there is no doubt that many more species might be obtained were the beds more thoroughly examined and other localities explored. Of the species described thirty-six are regarded as peculiar to New Jersey.

Besides the molluscan remains enumerated, Mr. Anthony Woodward gives a list of twelve species of foraminifera found in the marls at Shiloh and two at Jericho.

Prof. Whitfield, from a study of the fossils, would correlate the deposits with the Miocene of the States to the south, which is fully substantiated upon physical grounds as well. The writer of this review has traced the strata across Delaware into Maryland so that there can be no doubt but that the New Jersey Miocene is